referring it to the relation of the iron and the new body formed on the copper, the latter being, according to Volta, positive to the former.[1] By his own experiment the same substance was negative to the iron across the same solution.[2]

867. I desire at present to resume the class of cases where a solution of sulphuret of potassium is the liquid in a voltaic circuit; for I think they give most powerful proof that the current in the voltaic battery cannot be produced by contact, but is due altogether to chemical action.

868. The solution of sulphuret of potassium (800) is a most excellent conductor of electricity (802). When subjected between platinum electrodes to the decomposing power of a small voltaic battery, it readily gave pure sulphur at the anode, and a little gas, which was probably hydrogen, at the cathode. When arranged with platinum surfaces so as to form a Ritter's secondary pile, the passage of a feeble primary current, for a few seconds only, makes this secondary battery effective in causing a counter current; so that, in accordance with electrolytic conduction (658), it probably does not conduct without decomposition, or if at all, its point of electrolytic intensity (701, 718) must be very low. Its exciting action (speaking on the chemical theory) is either the giving an anion (sulphur) to such metallic and other bodies as it can act upon, or, in some cases, as with the peroxides of lead and manganese, and the protoxide of iron (1034), the abstraction of an anion *from* the body in contact with it, the current produced being in the one or the other direction accordingly. Its chemical affinities are such, that in many cases its anion goes to that metal, of a pair of metals, which is left untouched when the usual exciting electrolytes are employed; and so a beautiful inversion of the current in relation to the metals is obtained; thus, when copper and nickel are used with it, the anion goes to the copper; but when the same metals are used with the ordinary electrolytic fluids, the anion goes to the nickel. Its excellent conducting power renders the currents it can excite very evident and strong; and it should be remembered that the strength of the resulting currents, as indicated by the galvano-
meter, depends jointly upon the energy

(not the mere quantity)
of the exciting action called into play, and
the conductive ability
of the circuit through which the
current has to run. The
value of this exciting electrolyte is
increased for the present

[1] *Memorie della Societd, Italians, in Modena,* 1837, xxi. p. 219.
[2] *Ibid.* p. 224.